

Order of Operations:

PEMDAS (Parentheses – Exponents – Multiplication – Division – Addition – Subtraction)

#1 p12: Simplify $5 + 6 \cdot 9$

Answer:

$$\begin{array}{ll} 5 + 6 \cdot 9 = 5 + 54 & \text{PE} \boxed{\text{M}} \text{DAS } 6 \cdot 9 = 54 \\ 5 + 54 = 59 & \text{PEMD} \boxed{\text{A}} \text{S} \end{array}$$

#5 p12: Simplify $5 \cdot 3^2 - 13$.

Answer:

$$\begin{array}{ll} 5 \cdot 3^2 - 13 = 5 \cdot 9 - 13 & \text{PE} \boxed{\text{E}} \text{MDAS } 3^2 = 3 \cdot 3 = 9 \\ 5 \cdot 9 - 13 = 45 - 13 & \text{PE} \boxed{\text{M}} \text{DAS } 5 \cdot 9 = 45 \\ 45 - 13 = 32 & \text{PEMD} \boxed{\text{A}} \text{S} \end{array}$$

#6 p12: Simplify $21 + 49 \div 7 + 1$.

Answer:

$$\begin{array}{ll} 21 + 49 \div 7 + 1 = 21 + 7 + 1 & \text{PEM} \boxed{\text{D}} \text{AS } 49 \div 7 = 7 \\ 21 + 7 + 1 = 28 + 1 & \text{PEMD} \boxed{\text{A}} \text{S } 21 + 7 = 28 \\ 28 + 1 = 29 & \text{PEMD} \boxed{\text{A}} \text{S} \end{array}$$

#9 p12: Let $a = 5, b = 12, c = 2$. Evaluate $b^2 - 4a$

Answer:

$$\begin{array}{ll} b^2 - 4a = (12)^2 - 4(5) & \text{Make substitutions } a = 5, b = 12 \\ (12)^2 - 4(5) = 144 - 4(5) & \text{PE} \boxed{\text{E}} \text{MDAS } (12)^2 = 144 \\ 144 - 4(5) = 144 - 20 & \text{PE} \boxed{\text{M}} \text{DAS } 4(5) = 20 \\ 144 - 20 = 124 & \text{PEMD} \boxed{\text{A}} \text{S} \end{array}$$

#11 p12: Let $a = 5, b = 12, c = 2$. Evaluate $abc + ab$.

Answer:

$$\begin{array}{ll} abc + ab = (5)(12)(2) + (5)(12) & \text{Make substitutions } a = 5, b = 12, c = 2 \\ (5)(12)(2) + (5)(12) = (60)(2) + (5)(12) & \text{PE} \boxed{\text{M}} \text{DAS } (5)(12)(2) = (60)(2) \\ (60)(2) + (5)(12) = 120 + (5)(12) & \text{PE} \boxed{\text{M}} \text{DAS } (60)(2) = 120 \\ 120 + (5)(12) = 120 + 60 & \text{PE} \boxed{\text{M}} \text{DAS } (5)(12) = 60 \\ 120 + 60 = 180 & \text{PEMD} \boxed{\text{A}} \text{S} \end{array}$$

#19 p13: Simplify $(10^2 - 4 \cdot 8) \div (8 + 9)$.

Answer:

$$\begin{aligned}(10^2 - 4 \cdot 8) \div (8 + 9) &= (100 - 4 \cdot 8) \div (8 + 9) && \boxed{\text{P}}\boxed{\text{E}}\boxed{\text{M}}\boxed{\text{D}}\boxed{\text{A}}\boxed{\text{S}} \quad (10^2 - 4 \cdot 8) = (100 - 4 \cdot 8) \\(100 - 4 \cdot 8) \div (8 + 9) &= (100 - 32) \div (8 + 9) && \boxed{\text{P}}\boxed{\text{E}}\boxed{\text{M}}\boxed{\text{D}}\boxed{\text{A}}\boxed{\text{S}} \quad (100 - 4 \cdot 8) = (100 - 32) \\(100 - 32) \div (8 + 9) &= (68) \div (8 + 9) && \boxed{\text{P}}\boxed{\text{E}}\boxed{\text{M}}\boxed{\text{D}}\boxed{\text{A}}\boxed{\text{S}} \quad (100 - 32) = (68) \\(100 - 32) \div (8 + 9) &= (68) \div (17) && \boxed{\text{P}}\boxed{\text{E}}\boxed{\text{M}}\boxed{\text{D}}\boxed{\text{A}}\boxed{\text{S}} \quad (8 + 9) = (17) \\(68) \div (17) &= 4 && \boxed{\text{P}}\boxed{\text{E}}\boxed{\text{M}}\boxed{\text{D}}\boxed{\text{A}}\boxed{\text{S}} \quad (68) \div (17) = 4\end{aligned}$$

#27 p13: Let $s = 11, v = 8$. Evaluate $(2s)^2 v$.

Answer:

$$\begin{aligned}(2s)^2 v &= (2 \cdot 11)^2 \cdot 8 && \text{Make substitutions } s = 11, v = 8 \\(2 \cdot 11)^2 \cdot 8 &= (22)^2 \cdot 8 && \boxed{\text{P}}\boxed{\text{E}}\boxed{\text{M}}\boxed{\text{D}}\boxed{\text{A}}\boxed{\text{S}} \quad (2 \cdot 11)^2 = (22)^2 \\(22)^2 \cdot 8 &= 484 \cdot 8 && \boxed{\text{P}}\boxed{\text{E}}\boxed{\text{M}}\boxed{\text{D}}\boxed{\text{A}}\boxed{\text{S}} \quad (22)^2 = 22 \cdot 22 = 484 \\484 \cdot 8 &= 3872 && \boxed{\text{P}}\boxed{\text{E}}\boxed{\text{M}}\boxed{\text{D}}\boxed{\text{A}}\boxed{\text{S}}\end{aligned}$$

#32 p13: Simplify $27[5^2 \div (4^2 + 3^2) + 2]$.

Answer:

$$\begin{aligned}27[5^2 \div (4^2 + 3^2) + 2] &= 27[5^2 \div (16 + 3^2) + 2] && \boxed{\text{P}}\boxed{\text{E}}\boxed{\text{M}}\boxed{\text{D}}\boxed{\text{A}}\boxed{\text{S}} \quad (4^2 + 3^2) = (16 + 3^2) \\27[5^2 \div (16 + 3^2) + 2] &= 27[5^2 \div (16 + 9) + 2] && \boxed{\text{P}}\boxed{\text{E}}\boxed{\text{M}}\boxed{\text{D}}\boxed{\text{A}}\boxed{\text{S}} \quad (16 + 3^2) = (16 + 9) \\27[5^2 \div (16 + 9) + 2] &= 27[5^2 \div 25 + 2] && \boxed{\text{P}}\boxed{\text{E}}\boxed{\text{M}}\boxed{\text{D}}\boxed{\text{A}}\boxed{\text{S}} \quad (16 + 9) = 25 \\27[5^2 \div 25 + 2] &= 27[25 \div 25 + 2] && \boxed{\text{P}}\boxed{\text{E}}\boxed{\text{M}}\boxed{\text{D}}\boxed{\text{A}}\boxed{\text{S}} \quad 5^2 = 25 \\27[25 \div 25 + 2] &= 27[1 + 2] && \boxed{\text{P}}\boxed{\text{E}}\boxed{\text{M}}\boxed{\text{D}}\boxed{\text{A}}\boxed{\text{S}} \quad 25 \div 25 = 1 \\27[1 + 2] &= 27 \cdot 3 && \boxed{\text{P}}\boxed{\text{E}}\boxed{\text{M}}\boxed{\text{D}}\boxed{\text{A}}\boxed{\text{S}} \quad [1 + 2] = 3 \\27 \cdot 3 &= 81 && \boxed{\text{P}}\boxed{\text{E}}\boxed{\text{M}}\boxed{\text{D}}\boxed{\text{A}}\boxed{\text{S}}\end{aligned}$$